

(c) removing the sooty carbon product from the collecting substrate;

(d) contacting the sooty carbon product with a non-polar organic solvent effective to dissolve  $C_{60}$  molecules in said sooty carbon product; and

(e) recovering from said solvent a solid carbon product comprising  $C_{60}$  molecules.

46. The solid carbon product of Claim 45 further comprising:

(a) purifying the carbon product of step (e) to obtain  $C_{60}$ . *no extract*

47. The solid product of Claim 46 wherein the purification of step (f) is sublimation at 300-400°C, fractional crystallization, column chromatography, capillary electrophoresis, HPLC, preparative-thin layer chromatography, crystallization or extraction.

48. A brownish-red carbon allotrope. *- not limiting to brownish-red*

49.  $C_{60}$ .

50. Solid  $C_{60}$ .

51. Substantially pure  $C_{60}$ .

52. Substantially pure solid  $C_{60}$ .

53.  $C_{60}$  in macroscopic quantities.

54.  $C_{70}$ .

55. Solid  $C_{70}$ .

56. Substantially pure  $C_{70}$ .

57. Substantially pure solid  $C_{70}$ .

58. Crystalline  $C_{60}$ .

59. Crystalline  $C_{70}$ .

60. Substantially pure crystalline  $C_{60}$ .

61. Substantially pure crystalline  $C_{70}$ .

62.  $C_{70}$  in macroscopic amounts.

63. The  $C_{60}$  of Claim 53 wherein the  $C_{60}$  is present in amounts that are capable of being detected by IR.

64. The  $C_{60}$  of Claim 53 wherein the  $C_{60}$  is present in amounts that are capable of being detected by UV absorption.

65. The  $C_{60}$  of Claim 53 wherein the  $C_{60}$  is present in amounts sufficient to obtain an X-ray diffraction pattern thereof.

66. The  $C_{70}$  of Claim 62 in which the  $C_{70}$  is present in amounts that are capable of being detected by UV.

67. The  $C_{70}$  of Claim 62 in which the  $C_{70}$  is present in amounts that are capable of being detected by IR.

68. Macroscopic amounts of substantially pure  $C_{60}$ .

69. Macroscopic amounts of substantially pure  $C_{70}$ .

70. The solid carbon product of Claim 45, wherein the recovered  $C_{60}$  molecules in said solid are in macroscopic amounts.

71. A solid comprising  $C_{60}$ , said  $C_{60}$  being present in macroscopic amounts.

72. A solid comprising  $C_{70}$ , said  $C_{70}$  being present in macroscopic amounts.

73. A sooty product comprising  $C_{60}$ , the  $C_{60}$  in said sooty product being present in sufficient concentration to allow macroscopic amounts of said  $C_{60}$  to be separated therefrom.

74. A sooty product comprising  $C_{70}$ , the  $C_{70}$  in said sooty product being present in sufficient concentrations to allow macroscopic amounts of said  $C_{70}$  to be separated therefrom.

75. A sooty carbon product prepared by the process comprising:

(a) vaporizing a carbon source in the presence of an inert gas to provide a vapor of carbon atoms,

(b) quenching said vapor or carbon in said inert gas under conditions effective to nucleate and condense said vapor of carbon atoms into a sooty carbon product comprising  $C_{60}$

molecules, said  $C_{60}$  molecules being present in said sooty carbon in sufficient concentrations to allow macroscopic amounts of  $C_{60}$  to be separated from said soot.

76. The sooty carbon product of Claim 73, additionally comprising  $C_{70}$ .

77. The sooty carbon product of Claim 75 additionally comprising  $C_{70}$ .

78. The  $C_{60}$  of Claim 68 in which the  $C_{60}$  is present in amounts sufficient to obtain an x-ray diffraction pattern thereof.

79. A solid carbon product prepared by the process comprising:

(a) evaporation a carbon source in the presence of an inert quenching gas under condition effective to produce a sooty carbon product in a sufficient concentration to allow a macroscopic amount of said  $C_{60}$  to be separated from said sooty product;

(b) collecting the sooty carbon product produced therefrom;

(c) subliming the carbon product comprising  $C_{60}$  from the sooty carbon product; and

(d) condensing the sublimed carbon product comprising  $C_{60}$ .

80. The solid carbon product of Claim 79 wherein  $C_{70}$  is additionally present.

81. The solid carbon product of Claim 79 wherein the  $C_{60}$  is present in amounts sufficient to obtain an x-ray diffraction pattern thereof.

82. A solid comprising macroscopic amounts of crystalline  $C_{60}$ .

83. A solid comprising macroscopic amounts of crystalline  $C_{70}$ .